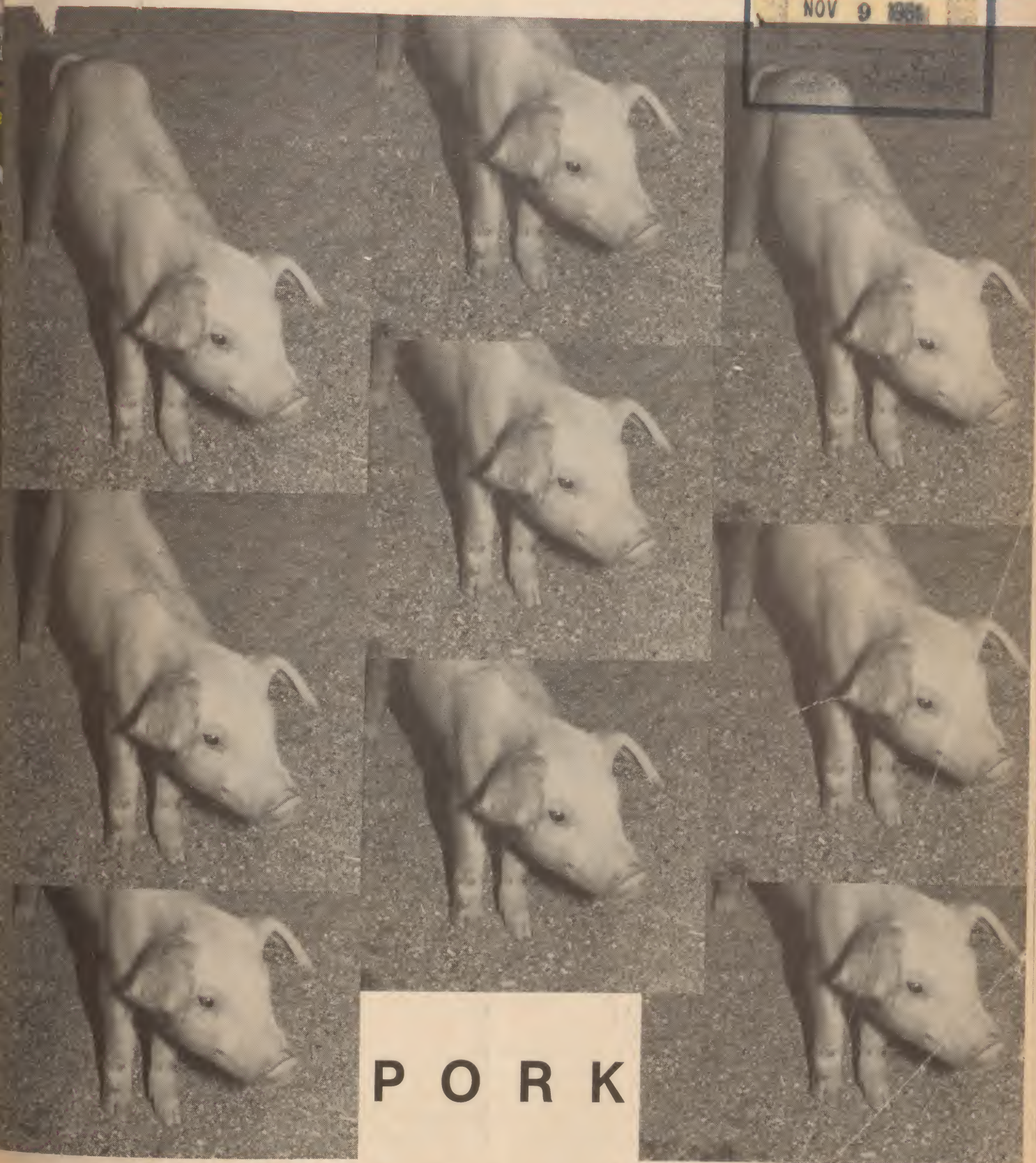


The Macdonald Journal

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P O R K

SPECIAL ISSUE



The Macdonald Journal

SEPTEMBER 1981

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Journal Jottings

Now that you're all cleaned up, for goodness sakes stay out of the barn!" How often did you hear words to that effect when you were a youngster? How many times have you said the same thing yourself? I'm sure that in years gone by similar words filtered through my ears, and I no doubt reacted with groans and, on occasion, ignored them completely. It was, therefore, a reaction of genuine amusement — after all, the grey up top is just overtaking the brown — that I received the above admonition from a friend just a few weeks ago while on holidays when I was on my way out to a farm home and then to a social gathering. When I arrived in the yard the young fellow helping out with summer chores immediately asked, "Are you coming into the barn? I'm halter training a calf for sale on Saturday." When I said no, I think I had better go straight to the house," he may have no-

ticed the slight hesitation in my reply because in five minutes or so there was a knock at the kitchen window and, by sliding the screen open, one soft, well-groomed black and white head poked through for the appropriate petting and scratching behind the ears. I tried, and that time, at least, I didn't get manure on my new shoes nor clinging odours on what used to be referred to as the Sunday-go-to-meeting clothes. All this is a long roundabout way of saying, therefore, that it was without hesitation and with enthusiasm that one beautiful July day I left the office much too early and walked over the overpass and through the pastures to the College Farm to take a photo or two in the piggery for this special issue on pork.

I may have lingered a little too long with the pigs but I guarantee you that you will not be wasting your time — if you have any interest at all from production through to consumption — by reading this issue

thoroughly. Contributions from the Departments of Animal Science, Agricultural Economics, Agricultural Engineering (I would like to thank J.E. Turnbull of Agriculture Canada for permitting Professor Jutras to condense his paper for the Journal), the School of Food Science, and the College Farm make it a topnotch package of worth while information on Quebec's number two agricultural product. Always considered a part of the Macdonald family and certainly no stranger to Journal readers, we are extremely pleased to have Gordon Thomson of the Quebec Ministry of Agriculture as guest editorialist. If there is anything that Gordon Thomson doesn't know about pork, it isn't worth worrying about. What is worrying me is that I can't foresee a legitimate excuse in the immediate future to get out and take "barn shots", and then when I do there may not be space, as with this issue, to use them.

Hazel M. Clarke

Editorial

Pork: A Quebec Success Story

During the past five years pork production has doubled in Quebec. Today farm income from pork is second only to farm receipts for dairy production. In 1976 pork production at about 50 pounds per capita was close to per capita domestic disappearance on a carcass weight basis. Today production is around 110 pounds per capita per year with domestic disappearance estimated at about 75 pounds. It should be no surprise then that Quebec pork is sold on the interprovincial market and exported to 32 countries. Principal export markets are the United States and Japan.

Contributors to this special issue have discussed some of the economic and production aspects of pork. There can be no doubt that through the contract production system the Quebec mill-feed industry has been a dominant factor influencing the recent expansion phase. While it can be congratulatory to suggest that doubling pork production with no sacrifice to quality is sufficient evidence of a sound system, some doubt persists concerning its comparative efficiency considering the theoretical advantage of integrated management. It is only fair to understand that the contract production system for pork in Quebec evolved from a need for risk sharing. Feed mills were often unable to fully collect from producers to whom they had given credit for the feed purchased to finish a batch of hogs. Some of these producers were willing to accept a flat fee per pig to finish hogs for the feed mill — first to repay their debt and later instead of independent production. As the system spread co-operatives became involved with their members in similar contractual arrangements, contracts of the type that are the essence of production co-operatives. It was only recently that quality objectives became generalized. Before that, efficiency was measured by the contractee's management. Feed conversion and mortality levels were established

and superior management was rewarded by a bonus provision. The corporate and co-operative feed mills competed to maintain or increase their feed market share. Introduction of a quota system in the dairy industry and the excellent progress dairy producers have made in producing their own feed did not offer growth potential for feed manufacturers. The quota system for poultry meat and eggs also left no growth situation for mill feeds. Steady increases in pork production during the 1970s with only levelling out of production in periods of low or negative returns were basically the result of feed marketing objectives. Where independent producers in other regions cut back production in response to poor prices, most Quebec producers took the flat fee and continued contract production. The banking industry had and has an important role to play. Basically it was easier to extend a line of credit to a feed mill who in turn dealt with a number of individual producers than it would have been to establish credit lines for each producer. During this period of rapid growth, farmers who wanted to expand their operations or young farmers wanting to get into production had two alternatives. Either they purchased expensive dairy or poultry quotas or they turned to the only non quota production — pork. Some dairy producers withdrew from dairy production and invested the proceeds from selling their quota in pork production. Whatever the route, most of the new entries into pork production had livestock backgrounds making them ideal candidates for farm credit systems.

Human resources, credit, a farm supply, and feed industry; the marketing system was expected to do the rest. Without exception, Quebec's network of abattoirs is as modern as any in the world, several being of world class scale. They have taken their basic raw material, the quality hog, slaughtered and chilled the carcass and, with few exceptions, broken these carcasses into commercial trimmed bone-in or boneless cuts. It is at this point that diversified marketing is imperative. Thankfully, there are strong regional, national, and international preferences for certain cuts of pork.

Quebecers historically do not consume bacon or pork loins in the proportion of carcass content. We have great preference for spare ribs but not much use for baby back ribs. In some seasons we use hocks and feet whereas neck bones and riblets have no devotees. Some of these consumer preferences are not very price sensitive.

In order to return the maximum price to the carcass we are fortunate that consumers in other provinces and countries complement our preferences. Bellies and hams move to the interprovincial market and the United States. Loins are boned out and shipped to Japan. Back fat and pork liver find markets in the E.E.C., and pork tails go to the Caribbean where they are considered a delicacy.

Finally, fully 65 per cent of all cuts are further processed to make ham, bacon, sausage, salami, pepperoni, and so on. The frankfurt sausage in a roll was one of the first fast foods. Today the hot dog has given ground, but pizza with pepperoni is gaining in popularity. When more and more meals are eaten away from the home, eating out is fashionable and products served can be in or out of fashion.

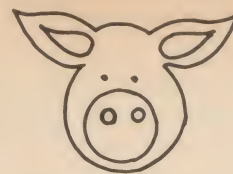
The modern retailer completes the delivery system offering a variety of competitive meats on a self-serve basis where the invitation to buy is called merchandising and advertised specials on meat are used to get customers into the store. At the meat counter beef has been the retailer's standby. Until recently it was a known fact of retail life that featuring pork did not bring in the customers. It seems that this latest myth about pork has been exploded.

The time may be ripe for an aggressive promotion of pork products. Prejudice has been defined as a loose idea that is tightly held; all sections of the pork system will have to work as a team to loosen that hold.

**Gordon Thomson, Agronome,
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des Pêcheries et de
l'Alimentation du Québec**

In keeping with our policy of freedom of expression, the opinions expressed are those of the author's and not necessarily of the Journal.

Pork Market Prospects Suggest Slower Growth



by Professor H.G. Coffin
Department of Agricultural
Economics

In the time it takes to read this article it is quite possible that some 900 hogs could have been marketed in Quebec. Such is the volume of output attained by this industry which has doubled in size since 1976. As of mid 1981 more than 100,000 hogs were being slaughtered each week in Quebec. This spectacular growth has made pork production second only to dairy as a source of income for Quebec farmers, accounting for 27 per cent of all farm cash receipts in the province in 1980.

A number of factors have contributed to this growth which has propelled Quebec into the lead among the provinces in pork production with 36 per cent of the total Canadian output. First, although the industry has encountered financial losses for part of the past two years, there were good profit opportunities or much of the expansion period since 1976. Second, relatively high unemployment rates in Quebec since 1976 have meant restricted opportunities for off-farm employment. Third, quota values and other capital requirements for entry into dairy and poultry production have made hogs an attractive alternative for young farmers getting started. Fourth, devaluation of the Canadian dollar since 1976 has made our pork exports more competitive on world markets. And finally, the availability of credit and the integration policies of feed companies have provided the necessary financial backing for expansion of the industry.

Contrary to popular belief in other parts of the country, it does not appear that this industry has been heavily subsidized in Quebec. Although the interest-subsidy policy of l'Office du Cr dit Agricole du Qu bec has attracted increased attention and loan activity in the past two years, most of the new investment in hog production, at least through 1979, was financed by the Federal Farm Credit Corporation. In

addition, most of the growth, and the vast majority of production, is located in counties in which little or no feed freight assistance is available on shipments of western Canadian feed grains. Hence, development has been largely independent of government programs.

But the purpose of this article is to examine a few aspects of marketing and market prospects for Quebec hog producers. How has the market been able to absorb the rapid increase in pork production since 1976? To what extent are prices influenced by production in Quebec? What can we expect to see happen to prices, consumption, and trade in the future?

It is appropriate to consider these questions in the light of an important development which occurred earlier this year, namely, the vote by Quebec hog producers in favour of establishing a provincial marketing board for hogs. The nature of the market for pork will determine, to a large extent, what such a board can and cannot do on behalf of producers in the province.

At the outset it must be noted that producers should not expect the immediate development of a national supply-management program similar to those for dairy and poultry products. In the first place, such a program would require an amendment to the existing federal legislation and any action on that level would most likely be preceded by a series of public hearings across the country to examine arguments for and against such a proposal. After that it would be necessary to develop a

plan acceptable to all participating provinces as well as the federal interests. Besides the time element involved there may be some question about the likelihood of these events proceeding immediately in view of the adverse publicity and strategic opposition toward the existing supply-management programs for dairy and poultry products.

It may also be argued that such an approach is less appropriate, and less necessary, for pork production than for the dairy and poultry products where they now apply. Let's consider the nature of the market for pork.

The Domestic Market for Pork

At the retail level, pork products compete directly with beef, poultry and, to a lesser extent, other meats for the consumer food dollar. A certain amount of substitution takes place among these products in response to price differences, retail promotions, and other factors. The pattern of consumption of these products in Canada for selected years during the past decade is shown in Table 1. Here we see that pork consumption was relatively high in 1971, declined 18 per cent by 1975, and then rebounded to a record high level in 1980.

At the same time, the opposite trend was occurring in beef consumption which continued upward to a record level of 113 pounds per capita in 1976 before falling back to less than 88 pounds per capita in 1980. In large measure, this pattern of beef consumption is attributable to the cattle cycle whereby the number of cattle on farms in most producing

Table 1. Apparent Per Capita Consumption of Meat in Canada^a

	1971	1975	1980
	(Pounds Per Capita)		
Beef	88.6	107.0	87.7
Pork	65.0	53.3	71.3
Chicken	29.1	29.1	37.3
Turkey	10.2	9.4	9.5
Total Meats ^b	208.5	213.7	214.2

^aRetail weight equivalent

^bIncludes veal, mutton and lamb, offal, and fowl.

Source: Agriculture Canada, Food Market Commentary, Vol. 3 No. 1, March 1981.

countries reached a peak in 1977 and then declined until this year. The resulting drop in the supply of beef also enabled chicken consumption to increase in the past few years as well as pork, so that total meat consumption per person has remained relatively constant, especially since 1975.

The general effects of supply and demand for those products are also reflected in relative price changes. This may be seen in Table 2 which shows the consumer price index for those products in Canada in relation to the levels of each in 1971. These data indicate that pork prices increased faster than those for beef and chicken until 1975 and have been slower since then. The wider differences in 1980 than in 1979 help to explain a sudden increase of nearly 10 per cent in pork consumption last year alone.

Studies have shown that consumer demand for both beef and pork is more sensitive to price changes for those products than it is for chicken. Pork and beef are also closer substitutes for each other than are most other meats. This means, in effect, that increased production of one of these products can be cleared off the market with a smaller drop in price than is the case for chicken or dairy products. But it also means that efforts to raise the price of pork through supply control may require a larger cut-back in production than would be needed for poultry meats. In short, pricing on the basis of cost-of-production would likely be less effective and less manageable for pork than for dairy and poultry products.

Export Markets

The other important dimension of the market for Canadian pork is that of exports. Despite the competitive price relationships to other meats in Canada, the domestic market has not been able to absorb the total increase in production of pork since 1976. Indeed, there has been a rapid growth in exports which has moved us from a net-import position in the mid 1970s to a net-exporter of 116 million pounds of pork in the first half of 1981. Total exports, on an annual basis, are estimated at about 250 million pounds. Nearly 60

Table 2. **Consumer Price Index for Beef, Pork, and Chicken in Canada, 1971 = 100.**

	Beef	Pork	Chicken
	(Per cent of 1971)		
1975	138	200	189
1979	264	239	243
1980	287	237	262

Source: Statistics Canada, Consumer Prices and Price Indexes. Catalogue No. 62-010.

Table 3. **Weekly Average Shipments of Pork Cuts by Cutting Establishments in Quebec, First Half of 1980.**

Market Destination	Weekly Volume	% Share
	(pounds)	
Quebec	7,880,000	57.3
Other Provinces	1,871,000	13.6
TOTAL DOMESTIC	9,751,000	70.9
United States	2,417,000	17.6
Japan	790,000	5.7
Other Countries	788,000	5.7
TOTAL EXPORTS	3,995,000	29.0
GRAND TOTAL	13,746,000	99.9

Source: Thomson, Gordon "Les Circuits Commerciaux du Porc Durant Le Premier Semestre des 1980" Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec. 1981.

per cent of those exports go to the United States and another 33 per cent currently go to Japan. Smaller amounts are exported to countries such as New Zealand, South Korea, United Kingdom, Cuba and other Caribbean countries.

Quebec production contributes substantially to the Canadian export trade. According to a study by Gordon Thomson, "Les Circuits Commerciaux du Porc durant le premier semestre des 1980", nearly 30 per cent of the products shipped by the cutting establishments surveyed were destined for the export market. A breakdown of the volume and shares distributed to various markets is shown in Table 3. Based on the shipments data reported at that time, the Quebec industry alone would have accounted for more than 200 million pounds of pork exports in 1980. Exports are running even higher through the first half of 1981.

Price Formation

In view of the volume of trade pork, particularly with the United States, and the proximity of that market, it is understandable that Canadian and U.S. prices are quite closely linked together. This is illustrated in Figure 1 which shows market hog prices in Canada and the U.S. during the past few years. Market prices quoted in

Montreal are generally a few cents per pound lower than those reported for Toronto.

Because of the large volume of marketings channelled through the teletype system operated by the Ontario Pork Producers Marketing Board, Toronto prices are considered to be the most reliable indicator of hog market conditions in Canada. Yet, as already noted, those Toronto prices are closely tied to those in the U.S. as part of the North American pork market.

Despite the growth in pork production and trade in Canada in the past few years, U.S. production is nearly seven times larger. By itself, Quebec production is only about four per cent of the Canadian-U.S. combined total. Therefore, even a 50 per cent increase in Quebec production would increase North American supplies by only about two per cent. Given the nature of the demand for pork, and the position of Quebec in the North American market, such an increase might be expected to lead to a price decrease in the order of two to three per cent in the North American market. Conversely, a 50 per cent decrease in pork production in Quebec may be expected to

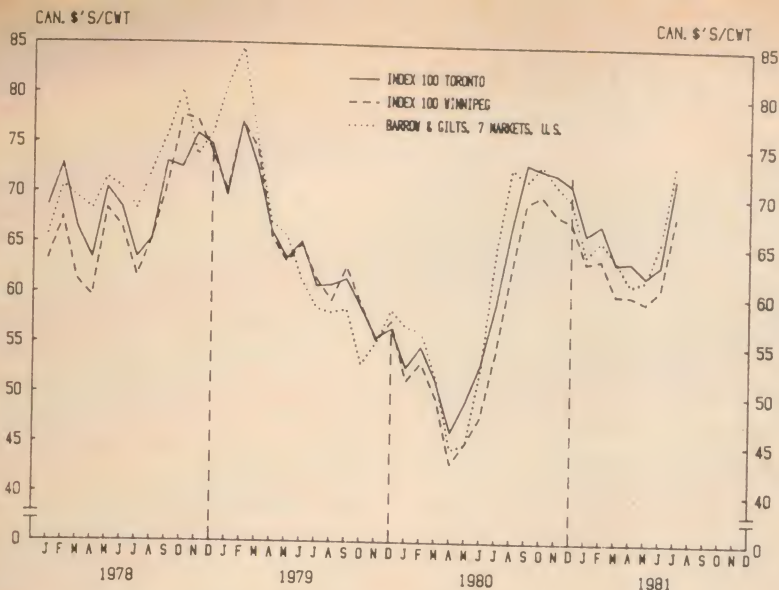


Figure 1. Market Hog Prices: Canada — United States.

increase price by only two or three per cent in the North American market. Hence, although it may be of little consolation when prices are below costs of production, it may be said that as long as processing capacity is adequate, Quebec pork production has relatively little impact on prices received by producers in this province and throughout North America in general. Under these circumstances, and as long as pork trade remains relatively open, a provincial marketing board could do very little to influence general price levels for pork. Even a national agency could do so only by restricting imports which may also jeopardize our export trade.

Price Discovery

The mechanics of establishing price at the provincial or local level are referred to as "price discovery". As already indicated, the procedure used in Ontario is an electronic (teletype) auction system whereby all meat packers may compete for specific lots of hogs offered at various designated locations by the provincial marketing board. Each packer acquires hogs by pushing a button to stop a systematically declining asking-price at a level which he feels he can afford to pay before losing out to the competition. Indeed, given a sufficient number of independent buyers, such a system fosters keen competition on the buying side and is generally considered to be an efficient and equitable system of marketing hogs as com-

pared to auction yards and individual negotiation.

A Quebec hog marketing board may well consider introducing an electronic marketing system for hogs in this province. Such systems are expected to gain popularity in the future because they can reduce transportation and handling costs for a variety of commodities as well as improving the competitive performance of the marketing system.

Vertical integration in hog production in Quebec is often considered to be an impediment to this type of development. But the extent of this integration may now be less than is generally assumed. Again, the study by Thomson reveals interesting data on the sources of supply of hogs purchased by abattoirs in Quebec in 1980 (Table 4). According to these data, vertical integration may not account for much more than 60 per cent of total production. In any event, unless the integrators are

Table 4. Weekly Volumes of Hogs Acquired by Abattoirs in Quebec by Source, 1980 (Jan - June).

Source	Volume (# of Hogs)	Percentage
Livestock Auctions and dealers	6,840	7.7
Producers	24,390	27.4
Feed-Mill and Packing House Producers	55,775	62.7
Ontario Sources	2,000	2.2
Totals ^a	89,005	100.0

Source: *Ibid*

^aDoes not include sows and boars

able to negotiate substantial premiums in their dealings with abattoirs, the existence of such arrangements should not preclude the development of electronic systems.

What of the Future?

The four most important threats to the future market for Quebec pork may be the following:

- Exchange rates
- Trade restrictions by major importers
- Increased supplies of beef
- Stagnation of pork consumption.

Each of these factors could have an important bearing on market prospects for Quebec hog producers. For example, an increase in the value of the Canadian dollar against other currencies would reduce the competitive edge which our exports have enjoyed in world markets in the past five years. This is particularly true of trade with the U.S., which is our largest customer. While the Canadian dollar may gain some strength in the wake of the recent oil price agreement, no dramatic changes are expected in the foreseeable future.

A decision by our major importers to reduce purchases of Canadian pork would be disruptive to the market and create price and surplus supply problems in the short term. This problem occurred in 1979-80 when Japan reduced her imports of Canadian pork for a few months, thereby putting pressure on the domestic market. The larger the volume of export trade, the greater is the risk of this kind of disruption. To reduce this risk it may be necessary to enter contractual arrangements with major importers. This is one function which could be performed by the

proposed federal export agency to be known as CANAGREX, which is expected to be discussed in Parliament this fall.

Increased beef production could pose a potential threat to the market for pork. Total meat consumption per capita appears to have levelled out in many countries, including Canada, and has actually declined in some cases during the past few years. At present levels of consumption, and with incomes being squeezed by energy prices, interest rates and other inflationary factors, it seems that increased consumption of one type of meat is likely to occur only at the expense of another.

Lower beef supplies and higher prices have paved the way for increased consumption of pork and chicken in the past few years. But the cattle cycle appears to have bottomed out in 1980 and cattle numbers are again increasing. That means increased supplies of beef in the years ahead. However, the rate of increase appears very slow at this point in time due, undoubtedly, to high interest rates and consumer resistance to higher beef prices. If other meat products remain competitively priced, beef producers are likely to have a difficult time regaining the dominance they once enjoyed in this market.

The final questions then are: How much pork will consumers eat? Have we reached the top of the market with this product or is there still room for expansion?

Pork consumption is at a record level in Canada. Some analysts believe it will not go much higher. But these forecasts tend to be based on past experience and tradition which saw beef and poultry consumption increase substantially through growth of the fast-food and restaurant business. In North American markets, at least, pork consumption has not been promoted by the hotel-restaurant-institutional trade. Even in supermarkets, it appears that pork products have not been featured to the same extent as beef and poultry until the past year or two. Consumption has reached the present level largely on the merits of the product itself and, especially, on the basis of price.

Pork consumption per capita is much higher in many countries than it is in Canada (Table 5). In most of these countries beef, poultry, and total meat consumption is somewhat lower. In Denmark, for example, pork represents 70 per cent of total meat consumption. This country also happens to be the world's leading exporter with nearly six times as much volume as Canada. But consumption is also relatively high among some of the world's leading importers of pork. Included in this category are the United Kingdom, West Germany, and even the United States (530 million pounds of imports in 1980).

As long as pork products remain priced competitively with other products in Canada there is little apparent reason why consumption should not increase further. Although these products are not as universally popular with all groups as are beef and chicken, there should still be room for expansion of the domestic market. But further growth is likely to be more difficult to achieve in the immediate future. The Agriculture Canada forecast of hog marketings over the next six months (October '81 to March '82) indicates that five per cent fewer hogs will be marketed than in the same period last year. A similar decline is expected in most other countries as well. This should result in higher prices for pork in the months ahead.

In the longer term, with regard to the export market, Canada should be in a favourable position to expand its share of world trade in pork to more than the present four to five per cent, as long as currency ex-

change rates remain somewhere in their present range.

Summary

In summary then, Quebec hog producers face a very competitive market. They must compete, not only with hog producers in other provinces and other countries but also with producers of beef, poultry, and other meats. Pork consumption has expanded rapidly in Canada in the past few years with the help of lower supplies and higher prices for beef and supply management of poultry products. Total meat consumption is now at a relatively high level and further growth in domestic pork consumption is likely to be more difficult to attain than was the case in the past five years.

There has also been substantial growth in export markets aided by devaluation of the Canadian dollar and aggressive marketing by pork processors. In 1980 some 13 per cent of total Canadian pork production was exported, three quarters of which originated in Quebec. Most of these exports have gone to the largest pork market in the world — the United States. There are opportunities for further expansion in trade, but market development here, as well as in the domestic market, will require assurance of continuous supplies at competitive prices. The reputation already established by the Quebec hog industry in this regard will prove valuable to such efforts and should be preserved. Any marketing board, provincial or national, must keep the importance of the export market and its requirements in mind in establishing a marketing policy.

Table 5. Per Capita Meat Consumption in Selected Countries by Type of Meat, 1980.

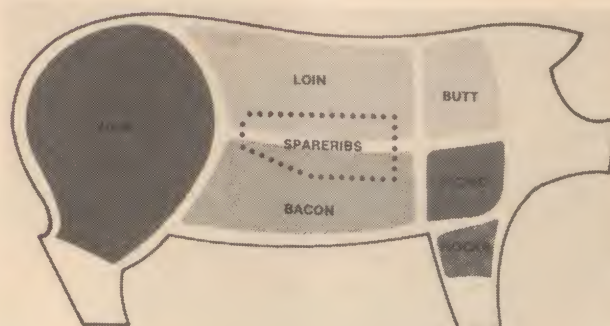
	Beef and Veal	Pork	Poultry	Total Meats ^a	Pork as % of Total
			(kilograms)		(%)
Canada	40.4	31.7	22.1	95.6	33
United States	48.8	34.3	28.7	112.6	30
Denmark	14.1	55.6	8.2	79.3	70
United Kingdom	23.9	26.3	13.7	71.9	37
West Germany	24.4	50.5	9.8	85.5	59
Austria	26.2	47.5	10.2	84.5	56
Switzerland	29.0	45.7	7.9	84.8	54
Taiwan	0.9	37.3	n.a.	n.a.	—
Japan	4.9	14.2	10.3	31.6	45

^aIncludes other meats not shown.

Source: U.S.D.A. Foreign Agriculture Circular, "Livestock and Meat", FLM 5-81, July, 1981.

CONSUMER UPDATE

ON PORK



by K. G. Lapsley
School of Food Science

With ever-increasing food costs, pork continues to be an economical source of animal protein for the Canadian consumer. It is available year round in fresh, smoked, fully cooked, or canned form. Nutritionally, pork is a good source of the essential minerals, iron and phosphorus, and an excellent source of the B vitamins, thiamine and niacin, which are required for a sound nervous system and good appetite. In addition, dieters take note — research has concluded that cooked, lean pork contains no more kilocalories than similarly cooked, lean portions of other meats.

Historically, the pig has been revered by both the Oriental and Western World for its varied meat and lard products. However, with increased availability of vegetable oils and other fat sources in the twentieth century, there has been a trend to breed leaner pigs, principally for meat. Today's pig has a long loin — the portion of the animal that produces the least fatty, most expensive cuts — and well developed hind legs. Approximately one-third of the animal's meat is sold fresh, the rest is either turned into processed products such as sausages or hot dogs or is cured by salting and smoking.

Buying and Storing Pork

Colour and consistency are the two best guides when one is purchasing pork. The prime loin cuts should be pale but tinged with pink and the fat should be pure white. Cuts from the shoulder and legs are generally

darker and more coarsely grained. Both flesh and the fat of all fresh cuts should be firm to the touch. Similarly, when buying ham and bacon, look for clean, white fat and firm, pink meat.

As with all meat, pork should be stored in the coldest part of the refrigerator, properly wrapped and placed on a plate to allow the juices to drain. Ground pork will keep one to two days, fresh cuts three to four days, and bacon and cured ham five to seven days.

The flavour, colour and nutritive value of fresh pork may be preserved up to six months by freezing. However, ham, sausages, and bacon should not be frozen for more than one to two months, due to the danger of their salt content turning the fat rancid. To freeze pork, wrap it firmly in freezer wrap and seal the package tight with freezer tape in order to keep air out and moisture in. Packaged meat purchased frozen should be kept frozen until needed. All meats should be thawed in the refrigerator to prevent bacteria growth on the outer thawed surfaces while the centre of the meat is still thawing.

Cured Pork

Modern curing techniques are most frequently applied to the fatty belly, which produces bacon and salt pork, and to the hind legs for hams. Meat curing involves the application of salt, colour fixing ingredients, and seasonings. In early times enough salt was added to preserve the meat and prevent microbial spoilage. Today, many products are only lightly cured and undergo mild heat treat-

ment. Therefore, they require refrigeration and have a defined shelf life.

The major colour fixing ingredient used in curing is nitrite, which accounts for the characteristic pink colour of ham. In addition, these nitrite compounds perform another very important function in cured meats; they prevent the growth of toxins responsible for botulism. The federal Health and Welfare officials strictly control the levels allowed in cured meat products. The safety of pork, bacon, or sausages cured without the aid of nitrite or nitrate compounds is questionable.

Fresh Pork

The only hazard to health associated with the eating of fresh pork is the disease-causing parasite *trichinella spiralis*. This bug, a rarity in today's streamlined pig industry, is impossible to detect in hogs (or flesh-eating game animals) but may be transmitted to humans if the pork is not cooked adequately. Incidence of this disease, which is characterized by nausea, diarrhea, fever, and muscular pain, and may be fatal, has dropped to the point where it is almost unknown in North America. The last reported Quebec case was in La Pocatière in 1979 and was traced to a butcher shop where both pork and wild game were handled. Every year 60,000 - 80,000 spot tests for the parasite are made throughout the country. In 1980 federal government inspectors found only three infected hogs and these were raised in a backyard for private consumption.

Until this parasite is completely eliminated from fresh pork the meat must be cooked thoroughly to protect against infection. Unfortunately, fear of the disease has often lead to overcooking. The parasite is destroyed and the meat is safe to eat when the internal temperature of a cut reaches 59°C (137°F). To allow an adequate margin for uneven cooking within a cut, food authorities recommend cooking pork to an internal temperature of 75°C (165-170°F). Cooks without meat thermometers should test pork for doneness by piercing the thickest part with a skewer or other sharp instrument; the juices should run clear, with no tinge of pink, when the meat is fully cooked.

Microwave Cooking

With microwave cooking, frozen pork thaws rapidly, fresh and cured pork cuts cook in a short time, and pork leftovers reheat quickly without dehydrating.

In conventional cooking of a pork roast the oven is pre-heated, when hot enough the pan with the roast is put in, the heat in the oven warms the pan and the surface of the meat, and the heat penetrates the meat until it is cooked through. Microwave cooking is faster. Microwave energy passes through glass, ceramic, plastic or paper and is absorbed only by the food. This energy causes the water molecules in the food to vibrate, which results in internal friction and this friction produces heat. This results in a rapid rise in temperature and a much shorter cooking time.

However, recently a United States Department of Agriculture report warned that fresh pork cooked in a microwave oven does not cook uniformly enough to assure the destruction of the trichinae parasite, if it should be present. American researchers were concerned that a

pork roast may register cooked on a meat thermometer, yet have cold spots where microwave energy had not penetrated. They recommend rotating the meat as it cooks, letting it stand covered with aluminum foil for several minutes and, finally, checking it in several spots with the meat thermometer to be sure the temperature is 75°C (170°F) throughout.

Agriculture Canada food consultants and scientists from Health and Welfare advise that microwave cooked fresh pork is safe if even more cautious cooking procedures are followed carefully. Their recommendations are: To cook pork roasts in a microwave oven, score the rind or remove it and place the roast on a non-metallic rack or an inverted saucer in a shallow glass dish.

Insert meat thermometer especially designed for the microwave oven in the centre of the meatiest part of the roast so the tip is not touching

bone or fat. Microwave at half power until the thermometer registers an internal temperature of 80°C. Turn the roast every 10 minutes for uniform cooking. The pork is best served within 10 minutes after cooking as pork roasts cooked in a microwave oven tend to dry out quickly.

For microwave cooking times for the various cuts of pork roasts, Agriculture Canada recommend following this timetable to ensure adequate cooking times for roasts of different sizes:

Additional information on pork may be obtained from the following agencies:

Food Advisory Division
Agriculture Canada
Ottawa, Ont. K1A 0C5

Canadian Pork Council
111 Sparks Street
Ottawa, Ont. K1P 5B5

MICROWAVE COOKING TIMETABLE.

CUT	MASS		COOKING TIME*hours (1/2 power)
	lb	kg	
LEG — shank end	5.5 - 6.5	2.5 - 3.0	2-3/4 - 3-1/4
	6.5 - 7.5	3.0 - 3.5	3-1/4 - 3-3/4
— butt end	5.5 - 6.5	2.5 - 3.0	3-1/4 - 3-3/4
	6.5 - 7.5	3.0 - 3.5	3-3/4 - 4-1/2
LOIN — tenderloin end	3.5 - 6.5	1.5 - 3.0	1 - 1-1/2
	3.5 - 6.5	1.5 - 3.0	1 - 1-1/2
— centre cut or rib end	3.5 - 6.5	1.5 - 3.0	1 - 2
	3.5 - 6.5	1.5 - 3.0	1 - 2
RIBS — loin ribs (country style)	2.0 - 3.5	1.0 - 1.5	1-1/2 - 1-3/4
	2.0 - 3.5	1.0 - 1.5	1-1/2 - 1-3/4
SHOULDER — butt	3.5 - 5.5	1.5 - 2.5	1-1/2 - 2
	5.5 - 7.5	2.5 - 3.5	2 - 2-1/4
— picnic	2.0 - 4.5	1.0 - 2.0	1-1/4 - 2-1/4
	5.5 - 7.5	2.5 - 3.5	2-1/2 - 3-1/2
— rolled	3.5 - 5.5	1.5 - 2.5	1-1/2 - 2-1/4
	5.5 - 7.5	2.5 - 3.5	2-1/4 - 3

*Cooking time will have to be adjusted for the wattage of microwave oven used. Tests for this timetable were conducted in 700 watt microwave ovens.

Times are based on meat being at refrigerator temperature (4°C) at start of cooking.

Facts of Today and Hopes for Tomorrow



by Professor E.R. Chavez
Department of Animal Science

The total number of pigs marketed per sow per year is the final result of swine production systems. The final output of all different production phases is the individual marketable pig and represents a unit of production with a high variability of productive efficiency.

The components of productive efficiency include a great number of variables which affect or limit part or the entire productive cycle.

Reproductive performance is perhaps the primary factor determining the subsequent potential efficiency of swine production systems. The variables or reproductive efficiency are sequentially dependent; that is, a given parameter of reproductive performance is limited by the results obtained in previous stages of the reproductive process. For instance, the number of piglets weaned per litter at a given age can never be greater than the number of piglets born alive per litter. In the same way, the number of piglets born at farrowing can never be greater than the number of developed embryos. A sequence of measurable parameters involved in reproduction are listed in Table 1. If we accept the values set for the "biological ceiling", then we determine that the maximum biological

capacity for the number of live pigs produced per year for any given sow would be 60. According to today's standards, the actual number of piglets per sow per year reach a value of 14.3. This represents only 23.8 per cent of the biological potential of the pig.

A great deal of potential exists for improving reproductive efficiency and consequently swine production. Ovulation rate, which is not listed in Table 1, is perhaps the starting point of any productive cycle. Ovulation rate can be increased through selection or through nutritional manipulation. However, it has been shown that increases in ovulation rate have not resulted in an increased number of live pigs farrowed. It seems, therefore, that at present ovulation rate is not a limiting factor, but embryonic mortality is a major problem to be overcome. Most sows ovulate an average of 17 ova of which about 95 per cent are fertilized but, on the average, only approximately 10 live pigs are farrowed. Thus, there is a pregnancy waste at this stage of about 40 per cent of fertilized ova. Embryo transfer techniques have been developed but are not as yet available to the industry. This may represent the way to overcome this problem in the near future. The litter size at farrowing is one of the most important criteria to evaluate the reproductive value of

gilts and sows. The percentage of stillborn piglets varies, but the figures normally reach five to seven percent as born dead. Incomplete cervical opening appears to be one of the main causes of stillbirth in swine. When total farrowing time exceeds eight hours, or when the time interval between piglets is as great as 45 minutes, the incidence of stillbirth increases. Piglet mortality continues during the first three days post-partum, and the results of many large surveys indicate that this phase is responsible for a great waste in pig production. Published surveys in Canada, England, and the United States gave average figures of 39.2, 12.6 and 13.1 per cent, respectively, for university swine units and experimental stations. Since piglet mortality does not stop here, a common estimated figure of 25 per cent mortality up to the day of weaning is frequently reported for Canadian producers. Approximately 30 million baby pigs die before weaning time each year in the U.S.

The gestation period is perhaps the only guaranteed parameter in the reproductive cycle. Thus, in order to reduce the overall period of the reproductive cycle our efforts should be concentrated on the lactation and post-weaning time before conception for the following cycle. Since sows do not come in heat while lactating and nursing their young, length of the lactation and interval from weaning to estrus is very important. The potential advantages of early weaning and successful insemination at the first estrus may represent a reduction in the length of the reproductive cycle from about 163 days to 149 days. This reduction of 14 days per cycle substantially improves sow productivity because it increases her output in more than one piglet per year and because it lowers animal feed cost per sow. It is interesting to note that

Table 1. — Comparative level of reproductive performance and the final efficiency of the biological potential.

Parameter	Biological ceiling	Optimum goal	Existing standard
Number offspring live/litter	20	10	10
Survival at weaning (%)	100	90	75
Number offspring weaned/litter	20	9.0	7.5
Gestation period (days)	114	114	114
Lactation period (days)	0	21	35
Postweaning time before conception (days)	7	14	14
Conception rate (%)	100	90	85
Litters/sow/year	3.0	2.45	1.9
Live pigs/sow/year	60	22.0	14.3
Biological efficiency (%)	100	36.7	23.8

the magnitude for improvement in efficiency through appropriate management and reproductive techniques, such as those just mentioned, compares favourably with results obtained in two decades of selection in the U.S.; the number of piglets weaned per litter in the U.S. rose from 6.45 in 1950 to 7.27 in 1970.

Overall productive efficiency of the system has been improved by a variety of procedures. In 1975 pigs reached market weight of approximately 100 kilograms at about 160 days while in 1945 approximately 200 days were required; in addition, a pig carcass of 1980 contains approximately 14 kilograms less lard than similar carcasses in 1945. Thus, more feed is now being converted into edible meat rather than waste fat. Notwithstanding these important achievements in efficiency due to a quicker turnover and a more suitable carcass for present day human feeding standards, the highest priority for further improvement in the pig industry efficiency

must be placed on the reproductive process by reducing piglet mortality and shortening the reproductive cycle. The figures given in Table 1 for the optimum goal should not be considered as unattainable in practice, for even though they represent an improvement of 50 per cent of existing standards in live pigs produced annually by a sow (almost eight pigs above 14.3), this only stands as an improvement of 13 per cent in biological efficiency.

There is no doubt that, if the vision held nowadays of the pig industry in the year 2000 is to become a reality, the standards detailed in Table 1 for the optimum goal stand as practical prerequisites. By then, a hog producer would select a superior young gilt with exactly the right ratios of preferred cuts (only limited by the biological shape of the animal) and of lean to fat tissue. By means of superovulation and sex selection techniques the producer would have her produce 30 to 50 fertilized eggs. Surrogate mothers

would be used for embryo transfer, and 100 per cent of the fertilized eggs would be brought to full term. The baby pigs would be born with greatly enhanced opportunity for survival and rapid growth. Optimum birth weight, as a result of new knowledge obtained from nutritional studies during implanted gestation, would be achieved. New techniques would control and prevent diseases such as transmissible gastro-enteritis and baby pig pneumonia. Pigs born to these superior sows would go to market at 120 days of age weighing 100 kilograms, tailor-made for the consumer and the processor. The components making up their feed would come from unconventional ingredients not competitive for human consumption. In the meantime, their mothers would have been back, within 20 days of farrowing, on their way to producing three litters of pigs per year. By then, the new "biological ceiling" hopefully would provide a new challenge for the researchers of the twenty-first century.

A NEW MANAGEMENT TOOL

CONTROLLED FARROWING WITH PROSTAGLANDIN

by Dr. B.R. Downey
and A.R.J. Peirce
Department of Animal Science

A new management aid for swine breeders reached the market this year with the approval of two prostaglandin products* for induced farrowing. Research has shown that prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) and several synthetic analogues will initiate the parturition process in most gilts and sows within 30 hours of a single injection. Although these products are effective for several days prior to the expected time of farrowing, piglets born very much

prematurely are likely to be less viable than those born at full term. Hence, the average gestation period for the herd, as well as the breeding dates for individual sows, must be known so that the injection can be given as near as possible to the expected farrowing date.

The Macdonald Experience

The 70-sow breeding herd on the Macdonald College farm had been used in two controlled experiments to study the efficacy of prostaglandins to induce farrowing. The results of these trials were so encouraging that it was decided, with ardent support from the herdsman, to induce all animals; the data reported here are those recorded during 1980. It should be emphasized that the

relative advantages of these compounds will vary depending on one's management system. At Macdonald continuous farrowing is practiced rather than "all in, all out" and the majority of farrowings are supervised. Consequently, attendance at nighttime and weekend farrowings was common and the first objective of the program was to have the animals give birth within more socially acceptable hours.

Sows or gilts to be induced were injected with either cloprostenol (175-250 μg) or $PGF_{2\alpha}$ (10 mg) at approximately 6:00 a.m. on Days 111, 112 or 113 of gestation (average gestation length in the Macdonald herd is 114.7 days). During 1980, the product to be used on any particular animal was chosen at ran-

*Planate® cloprostenol, ICI Pharma, Mississauga, Ontario L4V 1N3
Lutalyse® prostaglandin $F_{2\alpha}$, Tuco Products Co., Orangeville, Ontario L9W 3T3

Table 1. Farrowing Data After Prostaglandin Injection. 1980

	Treatment	
	Cloprostenol	PGF _{2α}
Time to onset of farrowing (hrs)	26.6 ± 0.7	27.9 ± 1.4
Duration of farrowing (hrs)	3.2 ± 0.5	2.8 ± 0.2
Gestation length (days)	112.3 ± 0.3	113.4 ± 0.5
Total piglets per litter	11.1 ± 0.4	10.4 ± 0.3
Live piglets per litter	11.0 ± 0.4	10.1 ± 0.1

Table 2. Growth Data of Piglets from Prostaglandin Induced Farrowings. 1980

	Treatment	
	Cloprostenol	PGF _{2α}
Piglet weights (lbs)		
— at birth	2.7 ± 0.1	2.8 ± 0.1
— at 3 weeks	10.2 ± 0.1	10.6 ± 0.1
— at 8 weeks	30.2 ± 0.3	32.2 ± 0.4
Piglets weaned per litter	9.5 ± 0.1	9.7 ± 0.1
At marketing:		
— weight (lbs)	189.1 ± 1.4	192.2 ± 0.9
— age (days)	170.9 ± 3.5	173.7 ± 2.3

dom by the herdsman and, as it turned out, 70 sows received cloprostenol and 41 received PGF_{2α}. As one can see in Table 1, the time from injection to birth of the first piglet averaged approximately 27 hours and farrowing lasted about three hours regardless of the product used. This meant that the majority of animals farrowed during the working day. The apparent difference between treatments in piglets born can only be explained by the relatively small number of litters (41) given the PGF_{2α} treatment. The number of piglets weaned per litter averaged over 9.5, regardless of the prostaglandin used (Table 2), and this is superior to the 8.9 average for non-induced litters over the last 12 years in the Macdonald herd. As expected, piglet weights at farrowing were lower than the herd average of 3.15 pounds for non-induced litters. However, mean weights by weaning time (three weeks) had virtually caught up to the 10.6 pound herd average.

In the Macdonald herd, the reduction in nighttime labour alone has more than paid for the costs of induced farrowing. If more piglets are weaned per litter in addition, as these figures seem to indicate, the profitability of the use of prostaglandin is difficult to dispute.

Supervision of Farrowing

Over 60 per cent of sows normally farrow at night, and many swine producers consider the advantages of supervised farrowing to be uneconomic. This may be true when farrowings are random; however, if they could be grouped into a concentrated farrowing period, supervision should result in an increased number of viable pigs. The average mortality rate from birth to weaning for Canadian piglets is greater than 20 per cent at present. A significant number of these deaths occur within hours of birth due to such factors as being born in the fetal membranes, having mucus over the nose, having a breach or difficult birth, and being laid on or crushed by the mother.

Cross Fostering

Synchronized farrowing enables the producer to make full use of cross fostering. All induced sows have oestrus at one time and, therefore, the piglets can be moved about to even litter numbers and size of piglet with complete freedom. The number of functional teats on all the farrowed sows can be assessed and this can be considered when the fostering is done.

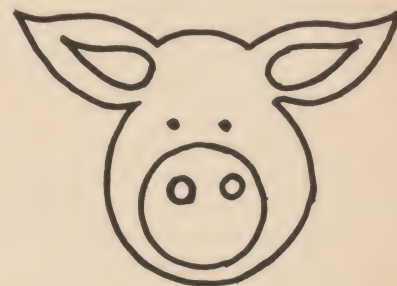
Efficient Use of Labour and Facilities

Work schedules can be preplanned permitting the maximum use of labour. Farrowing days can be arranged so that staff are available to supervise farrowings while other routine jobs can be scheduled on other days. Similarly, throughput of animals can be scheduled more effectively with batch farrowing as can routine tasks such as tail docking, teeth clipping, iron injections, castrations, etc. An additional benefit is that schedules can be made to avoid or at least reduce weekend, holiday, or nighttime farrowing.

Side Effects

Being very potent compounds, prostaglandins often elicit a transient response in sows 10-30 minutes following injection which appears to mimic nest-building. As well, flushing of the skin and chewing of bars of farrowing crates has been reported. Such effects can be explained as being normal physiologic reactions and should not be of concern. However, personnel should handle the compounds with care since they can cause problems in people with asthma and also have the potential to induce abortion in pregnant women.

In summary, it is apparent that prostaglandin represents a potentially valuable new tool with which swine producers may improve reproductive management in their herds. Although its use will not find an immediate practical use in all management systems, it should enable the producer greater flexibility in planning future programs.



Saving Energy In Swine Confinement Housing Systems

By J.E. Turnbull
Engineering and Statistical
Research Institute
Agriculture Canada, Ottawa.
Edited by P.J. Jutras
Department of Agricultural
Engineering

Some years ago, Canadian swine producers learned the advantages of raising pigs totally confined in warm, well-insulated buildings. Electric and furnace heating have both been economical and effective for supplementing the heat produced by the pigs themselves, thus enabling the operator to control environmental temperature and humidity for optimizing the performance of growing pigs.

Now the situation has changed; energy costs are going up at an alarming rate, and swine producers are being forced to consider every feasible way to reduce the purchased energy required without sacrificing good pig performance.

To find ways of reducing total energy costs consider first the various energy sources. It would be easy to say that all heating should be by natural gas, or, if gas is not available, by heating oil. This of course is not always practical since electric heating offers safety, convenience, and ease of control which often makes it preferable (small local heating loads, baby pig creepers, for example). It is readily apparent that one must go further than to simply use the cheapest energy source available. The answer lies in conservation of heating energy and, ultimately, the replacement of purchased energy from other sources within the farming system.

Certain electrical loads such as lighting, mechanical feed processing, and winter fan ventilation are almost unavoidable, but space heating is another matter; a lot of energy and related production costs can be trimmed from the heating.

On heat losses, the important factor is that, with well insulated construc-

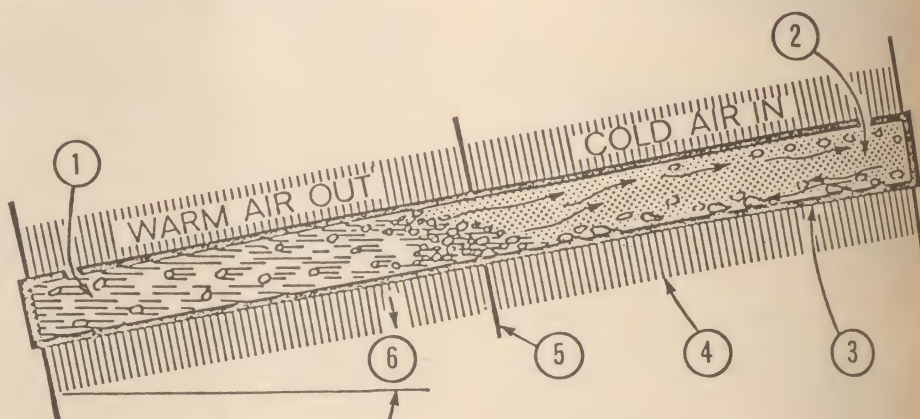


Figure 1. Diagram of a thermosiphon tube (not to scale). 1. Region of boiling liquid (12 oz. of refrigerant 22). 2. Region of condensing gas. 3. Round sealed tube of red brass, outside diam. 1.00 in (2.54 cm); inside diam. 0.902 in (2.29 cm); length 50 in (127 cm). 4. Aluminum fins, thickness 0.015 in (0.38 mm); 6 fins per inch (2.4/cm), pressed onto tube surface ratio 20.3/1. 5. Air flow divider, galvanized steel. 6. Elements sloped 4.5° from horizontal.

tion, the building heat losses through walls, ceilings, etc., are small compared to the heat losses through essential ventilation.

Methods of Saving Energy

Controlling Ventilation Rate to Minimize Ventilation Heat Loss.

It is easy to see that over-ventilation due to oversized fans, uncontrolled wind effects, leaky buildings, etc. waste enormous quantities of expensive heat energy.

Stepped ventilation, with fan steps 1 and 2 sized to be just under (step 1) and just over (step 2) the minimum winter ventilation rate has been the most generally accepted system.

There is always a problem to find ventilation fans small enough to handle minimum ventilation in small rooms with few pigs (farrowing, weanling, etc.)

Ventilation Heat Exchangers.

Several types of mechanical heat exchangers have been tested for extracting heat from exhaust air and transferring it to warm the incoming cold air, including the following:

- parallel-plate types, with parallel-flow, cross-flow, or counter-flow of the incoming and exhaust air streams;
- thermosiphon types, usually with

counter-flow (incoming air flows in the opposite direction to exhaust air);

— rock-bed types, where boxes full of round rocks are alternately heated and cooled by exhaust and intake air flows.

Many researchers over the years have worked with parallel-plate heat exchangers, all reporting good potential for making animal production units self-sufficient in terms of heat supply. Unlike solar collectors, heat exchangers can work night and day to extract heat that would otherwise be wasted. Counter-flow types are most efficient since they can maintain a higher average temperature difference through the plates separating the cold from the warm air streams. Commercial units of this type are available (Temp-X-Changer, etc.), but few have been used in barns due to dust fouling, icing up, and simply little interest on the part of manufacturers to resolve these problems and to market a system adapted to barn ventilation.

Figure 1 shows how a simple thermosiphon finned tube can "pump" heat from one air system (exhaust) to the other (intake). Advantages of the thermosiphon heat exchanger are: 1) compact design, 2) finned tubes arranged in several banks are easier to wash free of accumulated dust than are the deeper air passages of a plate heat exchanger. One manufacturer (Canadian

Figure 2. Proposed arrangement of thermosiphon heat recovery system in a swine finishing barn (500 hogs, CPS Plan 3428). 1. Warm room air to dust filter 2. 2. Dust filter 2 X 2 m, includes access door. 3. Exhaust fan to heat exchanger 4. 1200 1/sq 13 pa static. 4. Heat exchanger cooling section, 6 tube banks 0.9 x 0.7 m. 5. Cooled exhaust to outdoors. 6. Condensate drain at lower corner, hose to manure trench. 7. Cold air from ventilated attic to 8. 8. Heat exchanger warming section, 6 tube banks 0.9 x 0.7 m. 9. Intake fan, to 10. 10. Insulated attic duct, to 11. 11. Adjustable baffled air inlet slot. 12. Summer air inlet doors 2.4 x 1.2 into 10, both gables. 13. Warm weather exhaust fans. 14. Access covers hinge up for washing 4 and 8.

Chromalox) is now developing thermosiphon heat exchangers for various applications.

Figure 2 shows a suggested ducting arrangement for a thermosiphon heat exchanger used in a swine grower/finisher barn.

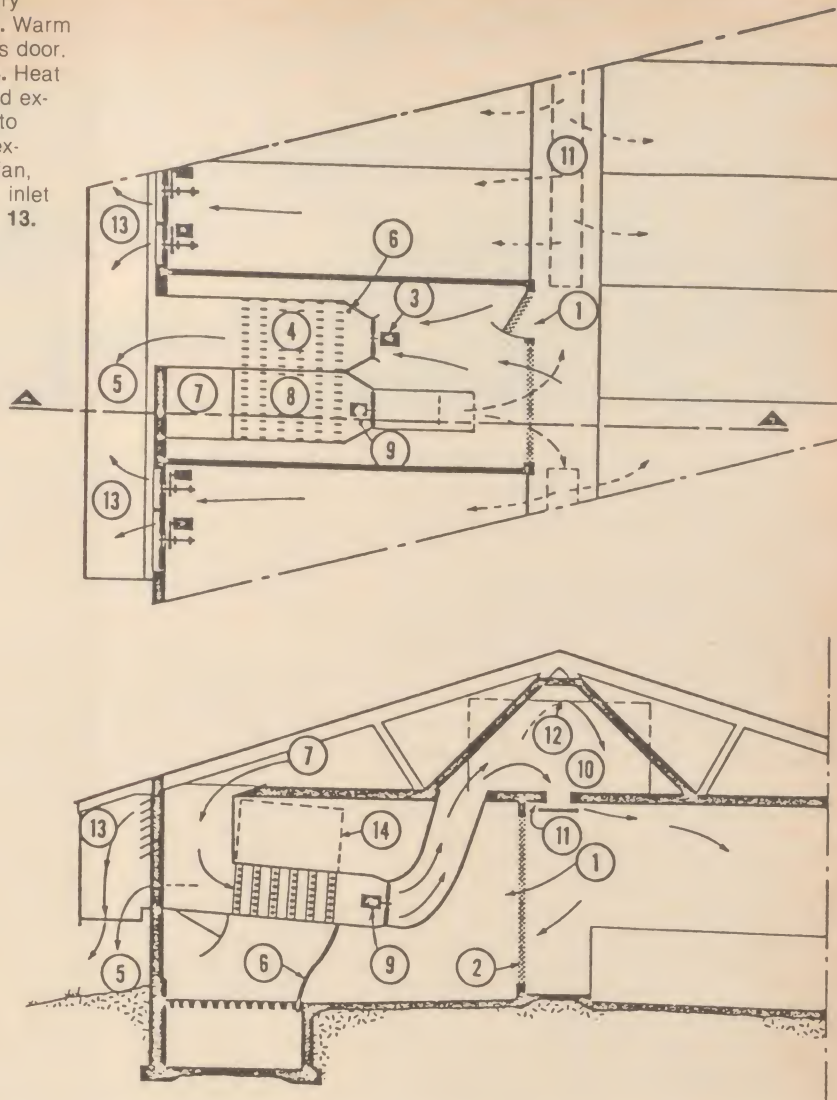
All air-to-air ventilation heat exchangers have one fundamental limitation; the heat available for recycling is only that part between room temperature and 32°F, or freezing. Heat exchangers can recycle more heat when the room is warmer and when ventilation is higher; finishing barns, for example, have more heat-saving potential than farrowing barns. The farrowing barn is likely to be somewhat warmer but its ventilation requirements are much lower because of the smaller animal population.

Summary

Rising energy costs for heating and ventilating swine barns are forcing swine producers to consider energy conservation and new technologies to utilize energy now wasted in the production system. Production of combustible biogas (methane) from manure is one possibility, but digester systems are still too complex and unpredictable for widespread use in Canada.

Reducing heat losses through ventilation is the first priority. Better control of ventilation rates to precisely match animal and weather variables is essential. Correct fan capacities should be selected, especially for the lowest rates required in cold weather, and fans should be controlled to prevent overventilation while heating equipment is operating (interlocked heating/ventilation control).

Heat exchangers will likely be cost-effective at reclaiming part of the enormous heat lost through ventilation, especially where rooms must be quite warm or where high winter ventilation rates are required.



Training Young Boars for Semen Collecting

by A. Sutherland
Swine Herdsman
Macdonald College Farm

In training young boars to mount a dummy sow for semen collecting a great deal of time and patience is required as well as a soft hand and a good firm grip.

Boars under seven months of age are usually the easiest to train and, if you are raising your own, it would be wise to try them at five to six months. The boars will be less nervous if they are familiar with the person who is going to work with them.

In preparing for the first attempt at collecting make sure that you have all of the equipment that you are likely to need if the boar does mount the dummy. Any clean containers that will hold 500 cc will do to collect the semen but, if you intend to use it to inseminate a sow, use a clean thermos bottle. A pail, one-third full of warm water, may be required to dip your hand into to remove the mucous from the boar's penis, which can be so slippery that you may not be able to hold onto it. Have your semen collecting bottle along with your pail of water in a convenient place outside of the

(Continued on Page 16)

The Family Farm



Published in the interests of the farmers of the province by the Quebec Department of Agriculture.



RESPIRATORY INFECTIONS: AN IMPORTANT CAUSE OF SWINE MORTALITY

In Quebec respiratory infections in swine are responsible for an important part of the mortality observed during finishing.

The increase of the size of the herds and the density of their population have created conditions that are favourable for the appearance, the spread, and the persistence of respiratory infections.

This was revealed from the results of a survey conducted in March 1981 by the Veterinary Services of the Ministry of Agriculture, Fisheries, and Food with swine grower-finishers and farrower-finishers. From a compilation of the data accumulated from this survey the following results have been observed: the average rate of mortality during finishing was 4.52 per cent from the last six months; 38 per cent of the grower-finishers and 24 per cent of the farrower-finishers have declared more than 4 per cent mortality (above average) — the average rate of mortality during finishing is much higher at the grower-finishers than at the farrower-finishers, namely 5.94 per cent and 3.37 per cent respectively; among the 245 producers above normal, 78 per cent met with respiratory problems; among the producers who have experienced respiratory problems, 49 per cent had bought their hogs at auctions, 36 per cent from peddlars, and 16 per cent from other sources; in the case of Haemophilus pleuropneumonia 100 per cent of the producers had bought at auctions.

Prevention

In order to combat efficiently the

respiratory infections of swine, the Veterinary Services of the Ministry recommend various measures of prevention, particularly with methods of management and housing.

For example, it is suggested that overloading of housing should be avoided. In order to do so, the Veterinary Services recommend a minimum of 78 square centimetres of floor surface per 11 kilograms of weight.

Good sanitary conditions must be maintained inside the building. It is recommended that a sanitary cleaning be carried out between each lot, that is, empty a section, wash it, and disinfect it. If this is impossible, the paddock at least must be thoroughly cleaned and disinfected after the hogs have been removed and before replacing them. This method aims mainly at the decrease of the microbial load and to facilitate the adaptation of the piglet to its new environment.

The Veterinary Services recommend good ventilation of the finishing house. It is a fact that temperature, humidity, air velocity, dust, and ventilation conditions constitute determinate factors in the health aspects of the animals being raised.

This is why veterinarians consider as essential the following conditions if one wishes to maintain a sanitary environment in buildings that are ventilated mechanically:

Buildings must be well insulated (the minimal recommended being R 15 for the walls and R 23 for the ceilings);

During cold weather, a minimum of continual ventilation must be maintained in order to reduce microbial

contamination of the air and to facilitate the introduction of a certain amount of pure air while exhausting the used air to the outside;

The air intake system must allow for a uniform introduction of air in sufficient quantity in order to avoid that the negative pressure (static pressure) of one area exceeds 1 centimetre of water;

The number of animals kept must meet the housing capacity in order to avoid humidity problems in the sections that are not occupied or under-occupied;

When the heat produced by the animals is insufficient (particularly at the arrival of piglets), complementary heating must be supplied to ensure a minimum of continual ventilation;

It is important to adjust the ventilation system (therostats, air inlets, etc.) and particularly to clean the ventilators periodically because the dust and the dirt can reduce their efficiency by 30 to 40 per cent in certain cases.

Let us stress, finally, that the gravity in the economic impact of respiratory infections in a swine herd can vary a lot from a practically hidden infection on the clinical and economic level or only bringing about a certain heterogeneity in the lots until the deadly disease generates conditions that can definitely compromise the economic future of the enterprise. Good methods of management and housing are therefore essential if one wants to avoid the use of antibiotics, which are expensive and sometimes deceiving and at any rate of a limited efficiency on a short-term basis.

AN AGRICULTURAL STAY ABROAD: AN OPENING ON THE WORLD

This year again, the Ministry of Agriculture, Fisheries, and Food in collaboration with IAEA (International Agricultural Exchange Association) offers young farmers the possibility of living a unique experience by registering for an agricultural stay on a farm in another country.

For the last four years 157 young Quebecers, 44 of them girls, have taken advantage of these programs of farm stays abroad in order to round off their agricultural training and to become acquainted with a culture other than their own.

Admissions Conditions

The future candidate must meet certain basic requirements among which are: be between 19 and 28 years old, be already committed to preparing a future in agriculture, and have practical experience of at least six months on a farm.

Financial Participation

The candidate selected will have to pay the total cost of transportation by plane, insurances, the welcoming session, etc. However, he will receive on the average an allocation of \$70 a week plus board and will be entitled to holidays during his stay in the chosen country.

Programs for 1982

Departure, March 1982

Europe: Denmark, Germany, Sweden, Switzerland, Norway.
Duration: eight months.
Type of Farms: dairy, hog, poultry, horticultural, beef production.
Total cost: about \$1,380
Registration: November 1, 1981, at the latest.

Departure, April 1982

Western Canada: Manitoba, Saskatchewan, Alberta, British Columbia.
Duration: six months.
Type of farms: cereal and forage production, beef cattle, and diversified production.
Total cost: about \$300 not including transportation.
Registration: November 1, 1981, at the latest.

Departure, May 1982

Europe: Denmark, Germany, Sweden, Switzerland, Norway.
Duration: 6-1/2 months.
Type of farms: hog, dairy, poultry, vegetable, and beef production.
Total cost: about \$1,330
Registration: December 1, 1981, at the latest.

Departure, August 1982

Australia or New Zealand.
Duration: eight months.
Type of farms: sheep, dairy, vegetable, and beef production.
Total cost: Australia, about \$2,400; New Zealand, about \$2,300.
Registration: March 1, 1982, at the latest.

Departure, October 1982

Australia or New Zealand.
Duration: six months.
Type of farms: sheep, dairy, vegetable, and beef production.
Total cost: Australia, about \$2,350; New Zealand, about \$2,250.
Registration: May 1, 1982 at the latest.

A 13-month program of farm stays around the world is also offered.

For complete information or to register, get in touch with the Regional Office of the Ministry of Agriculture, Fisheries, and Food, or the Service des Organismes et de la Relève Agricole at (418) 643-2656.

THE ACCREDITATION PROGRAM IN FARM MACHINERY MEETS ITS OBJECTIVES

The consultative committee on agricultural machinery of the Ministry of Agriculture, Fisheries, and Food is convinced that the accreditation program is the answer to the needs of the producers with regard to the servicing of farm machinery, and the support it has received from the professional associations proves that it is meeting its objectives to date.

This program was instituted in order to guarantee to the agricultural producer that the dealer with whom he does business sells him equipment for which there will be the necessary replacement parts for a reasonable period and will be able to ensure servicing on a long-term basis.

According to Mr. Bertrand Pelletier, mediator of complaints on farm machinery, the accreditation program was not put in place easily since it was necessary to correct old habits and to combat certain reticences. But since the installation of the program, the quality of the service after sales has greatly improved if one believes the decrease in the number of complaints as the program is developing.

The committee first identified the dealers and the brand names offered for sale. It then accredited those which met the requirements of availability of long-term service and of spare parts. Then it became the responsibility of the dealers to undertake to offer for sale only brand name machinery which had been accredited and for which they must ensure an adequate service to the agricultural producers.

The program does not solve all the problems. It has nothing to do, for example, with the quality of the machinery or the machinery's efficiency. It does not guarantee either the solvency of the dealers or the suppliers. Recent examples have indicated how much this aspect of the business is unforeseeable. However, the situation has evolved greatly. For example, the suppliers now select their dealers much more carefully. They supply them with the instructions and materials necessary for good maintenance or repair work and instruct them to respect the guarantee clauses and also those of technical aid. Furthermore, the suppliers from outside who try to liquidate pieces of equipment in Quebec do not find any takers with the dealers because their brands have not been accredited. This avoids inconvenience to the farmer who would have to look for the origin of this equipment and obtain spare parts.

The consultative committee, composed of representatives from all the sectors of farm machinery, is in constant contact with the growers, the suppliers and the dealers. It attempts as much as possible to avoid irregular commercial practices and requires certain necessary corrections and has even established penalties. It can, among other things, require the cancellation of the accreditation of those who do not hold to their promise.

Experience has proved that the program has contributed greatly in improving the after-sales service, and it offers producers a professional service in farm machinery. The committee intends to carry on. It is important to clarify that in order to

support the objectives of the committee the mediator of complaints in farm machinery is always available to help you in solving the problems in buying, selling, servicing, spare parts, or guarantee. He can be reached by writing to him at the

Ministry of Agriculture, Fisheries, and Food, Department of Farm Hydraulics, Machinery, and Farm Construction, 1020, route de l'Eglise, Sainte-Foy, Québec, G1V 3V9. The telephone number is (418) 643-2534.

(Continued from Page 13)

boar's pen where it can be easily reached.

As with natural mating, you always take the sow to the boar's pen, especially a young boar; therefore, you must take the dummy sow to his pen. The dummy that is used by the older boars is usually set too high for the young boar but, when it is removed from the platform, it is low enough for him to climb up on. If the dummy is too high, the young boar will also have difficulty reaching the cross bar to rest his feet on and is liable to slip off.

Now, with all of the equipment you are likely to need outside the pen, put down on the floor a good layer of sawdust, sand, or any other bedding material. This is necessary in order to make certain that if the boar does try to mount, there will be no danger of him slipping as this could very well scare him enough to prevent him from making another attempt. Next, put the dummy in the pen in the most convenient place, preferably to one side so that the boar can only mount from one side or from behind. Make sure that the dummy is well secured. If you use your right hand to collect with, you will want to stay at the left side of the boar and dummy. Some young boars will mount the first time without any trouble, while others do not seem to be the least bit interested. With the keen ones all that is required is to be careful with them, especially when they dismount. Encourage then to slip off backwards over the end of the dummy instead of coming over the side, a way in which they are apt to fall off and get hurt. After three or four collections in his own pen, the boar is then ready to be taken to the regular collecting pen. This is where a little patience is required as the change in surroundings may confuse him but, by using a piece of



Mr. Ted Sutherland trained many boars for semen collecting on the College Farm.

hinged plywood, you can crowd him over towards the dummy, keeping his head towards the rear end. If he cannot turn around, this usually works. With the slow or not so keen boar, there is not much you can do but wait until he is ready. You can encourage him by letting him mount a gilt in good standing heat. Do not let him enter the gilt but collect from him as you would on the dummy. On

the following morning, put the dummy in his pen instead of the gilt, and there is a good chance that he will mount quite readily. A dummy which is used regularly will smell strong enough to encourage a young boar to at least show some interest in it. However, it does help to sprinkle some fresh semen over the rear end as this seems to be the only thing that will stimulate him.

Born some 65 years ago in Scotland, Mr. A. (Ted) Sutherland came to Canada in 1949 to assume a position as Animal Technician with Dr. Earle W. Crampton in what is now known as the Department of Animal Science. In 1955 Ted returned to his homeland to work with the Department of Agriculture. He returned to Canada in 1959, and since that time he held the position as Herdsman of the College swine herd.

Mr. Sutherland is a man of many talents. He always had the most

beautiful vegetable and flower gardens, raised exotic rabbits, guinea pigs, multicoloured cats, bred canaries, and was an accomplished ploughman. As expected of a true Scot, he turned all his ventures into money-making enterprises!

On his recent retirement, Ted and his wife Helen returned to their beloved homeland to retire in Nairn, Scotland. His many talents will be missed by all those who had the pleasure to work with him.

QWI

FWIC Annual Board Meeting

The 35 FWIC Board members from across Canada met at Carleton University, Ottawa, June 22-26 to discuss, formulate policies, and exchange ideas. The President, Mrs. Emmie Oddie of Saskatchewan, welcomed the members to the five-day meeting, which opened with an informal get-acquainted session Sunday evening.

The Senior and Junior Directors' meetings, planned and conducted by Doreen MacInnis of Prince Edward Island and Trudy McDonnell of Newfoundland, stimulated discussion from which resolutions were later formulated. An address by Michael Jarvis of Agriculture Canada focused attention on the issues and concerns facing Canadian rural women.

An attempt will be made to attain a greater understanding between producers and consumers. This high priority program will be directed by Senator Martha Bielish, FWIC Agriculture Chairman.

FWIC continues to be concerned with the escalating rate of teenage pregnancies and the related social problems.

A resolution was forwarded to the federal and provincial departments of health requesting an educational program to alert prospective parents to the risk of alcohol use during pregnancy.

With 1981 — the Year of the Disabled in mind, a resolution was forwarded requesting that Canadian paper currency be made identifiable by the visually disabled.

The position taken by the Federated Women's Institutes of Canada is that divorce remain under federal jurisdiction.

FWIC declared that the week (from Sunday to Saturday) in which February 19 falls be Institute Week to be celebrated by members in each province as they wish.

To foster national understanding, the Institutes are carrying out a twinning program. Quebec is twinned with Newfoundland.

FWIC work continues in the Northwest Territories and in Labrador. Plans were made to bring delegates to the ACWW Mini Conference in Winnipeg in November and the FWIC Conference in Fredericton in June 1982.

Mrs. D. Duncan, from the Ontario Ministry of Culture and Recreation, spoke on Ontario's policy concerning museums. Mrs. John Charlton has retired from the Hoodless Homestead Committee but will continue to record names of memorials and donors to the Hoodless Foundation Fund.

Winners in the Canadian Unity Poster Competition were Lisa Hamilton of Ochre River, Manitoba, and Monica Winkeler of Perkinsfield, Ontario. Ethel Thomson of New Brunswick and Evelyn Hamilton of Saskatchewan shared the Hazel Stiles Scholarship. The Inez Derby Scholarship was awarded to Isobel Blair Kinnear of Ontario.

Members were reminded of the Tweedsmuir Competition: a history kit, a rug, and an essay, as well as the humorous poem for the Cairine Wilson Trophy. These entries are to be in the Quebec Institute Office by February 1, 1982. Entries for Past Presidents' Competition for children 14 years of age and under are to be in the Provincial Office by January 15, 1982.

Committees were set up and plans made for the FWIC Convention to be

held at the University of New Brunswick in Fredericton, June 13-17, 1982.

A report of the ACWW Conference Committee held at the University of British Columbia, Vancouver, site of the 1983 ACWW Conference, showed that plans are progressing. Miss Heather McGregor, General Secretary of the ACWW, and Mrs. Greta McMordie, Chairman of the Triennial Conference Committee, London, England, were present. Registration forms are to be available mid year 1982. Registration fee is £25 and the hostess fee is \$90 Canadian. Used stamps are to be collected, but they must not be removed from the paper.

Board members had an opportunity to visit the National office. On Tuesday evening members were entertained at dinner in the Parliament Buildings, arranged through the courtesy of Senator Martha Bielish. Following the dinner we toured the Parliament Buildings and had an opportunity to visit the House of Commons while in Session.

Mrs. Sterling Parker
QWI 1st Vice-President

HANDICRAFT COMPETITIONS

J. & P. Coats Competition

This competition is sponsored by the J. & P. Coats Company and is judged solely on the quality of stitching, appearance, and suitability of material. One article only may be submitted by any one member.

The Competition is judged at the County level at the County Annual Convention. The first and second winning articles only may be forwarded to be judged at the Provincial Annual Convention.

County Secretaries must see that the winning County articles are in the Provincial Office at least one week prior to the Convention. Each article must have securely attached to it the name, address, branch, and county of the winner.

A list of the names of the first three winners at the County level along with their names, addresses, branch, and county, must be sent to Mrs. Cascadden, Provincial Treasurer, 137 Queen Street, Apartment 3, Lennoxville, Que. J1M 1J7 at least one week prior to the Provincial Convention in order for Mrs. Cascadden to draw up the list of winners for the County prizes.

Each category will be judged separately.

1. Embroidered Dresser Scarf

Choice of material optional; not less than 35 cm by 80 cm, labels of materials used must be attached to the article.

2. Crocheted Christmas Tree Decorations, set of four

Using crochet cotton; trim optional; no kits; labels of materials used must be attached to the article.

3. Embroidered Sampler

Using at least four different stitches on any suitable material; not framed; labels of materials used must be attached to the article.

QWI Handicraft Competition

Any member may submit an article in each class. Prizes will be paid out of the Quebec Service Fund. The name and address and the name of each branch and County must be securely attached to each entry. This competition is judged solely at the Provincial level. All articles must arrive at the Provincial Office at least one week prior to the Annual Convention.

1. Knitted Bed Jacket Pattern and fibres optional; sample of knitting used is required.

2. Back and Cushion for Chair (Sewn). Model, material, stuffing, and finish optional; sample of material used is required.

3. Hooked Rug on Jute Oval, not less than 40 cm by 70 cm; pattern and fibres optional; samples of material and fibres used are required.

4. Small Hand-Quilted Article Choice of pattern and material optional; examples of some articles that could be made are: pot holder, bun warmer, tea cosy; samples of materials used are required.

5. Crocheted Afghan Approximately 120 cm by 170 cm; sample of crocheting is required.

EXPO-QUEBEC 1982

Weaving

1. Travelling Rug warp and weft: fibres optional; technique: weaving without tabby; not less than 135 cm wide; finish optional; sample of fibres used is required.

2. Scarf for Adult (rectangular) warp and weft: fibres optional; technique: weaving optional; not less than 20 cm wide; finish optional; samples of technique and fibres are required.

Sewing

3. Child's Overall, 2 to 12 years of age Style and material optional; fancywork optional; sample of materials used is required.

4. Back and Cushion for Chair Model, material, stuffing, and finish optional; sample of materials used is required.

Knitting

5. Knitted Bed Jacket Pattern and fibres optional; sample of materials used is required.

Fancywork

6. Table Runner with Openwork Border Material optional, embroidery design optional; not less than 30 cm by 80 cm; samples of material and fibres used are required.

7. Hooked Rug on Jute (Oval) pattern and fibres optional; not less than 40 cm by 70 cm; samples of materials and fibres used are required.

N.B. In the fancywork class, only one article is required. You must choose one of the two suggested articles.

Stanbridge East Celebrates 60th

On June 17, in the St. James Anglican Church Hall, which was tastefully decorated for the occasion, the Stanbridge East Women's Institute celebrated 60 years of work for Home and Country.

Mrs. Elizabeth Biggs, President of the branch, welcomed approximately 50 members and guests. She introduced Mrs. Esther Mason, County President, Mrs. Reda Lewis, Area Vice-President of FWIC, Mrs. Bernice Moore, who attended the first meeting and has been a faithful member for 60 years, her daughters Mrs. Esther Brown and Mrs. Margaret Cheek, Mrs. Doris Rhicard whose mother Mrs. H. Kemp had been first president, and Mrs. Mildred Bracey whose mother Mrs. C. Blinn was also one of the pioneer

members. Mrs. Bertha Fortin and Mrs. Maud Laycock, also members in 1921, sent their congratulations but were unable to attend. Mrs. E.C. Knight had been the first secretary. There were beautiful arrangements of flowers on the piano and guest book table placed there by her son Mr. Paige Knight in her memory. The executive and conveners were introduced and congratulations from branches and individuals were read.

Mrs. Harriet Ethier, 2nd Vice-President, was called on to read the minutes of the organizational meeting held on March 1, 1921, and of the first meeting at Cornell Place when Miss Roache of Macdonald College and Mrs. Beech, County President, attended on April 14.

Mrs. Ruby Moore then spoke, saying it was a great privilege for her to know Mrs. Bernice Moore and talked of her long association with the WI. She presented her with a red corsage and the book "Pioneer Women". Mrs. Moore graciously thanked everyone.

Now came the time to look into the past. Mrs. Biggs said that reading through the minute books she felt was a lesson in history of the organization, the community, and Canada. What did Women's Institute mean to these women? What brought these women together? What did they hope to accomplish? Their first concern was the quality of education for the children and second was the need for a community hall. It also was a way to share with other women their joys and sorrows and love for family, community, and country. They were closely associated with the extension services of Macdonald College.

In 1924 a \$10 prize in gold was given for highest aggregate, black boards were bought, medical inspection for children was organized, and the water supply checked. They saw the completion of the Memorial Hall.

Money was sent in the 30s to help drought-stricken farmers in the West. A picnic was held at Oak Hill near Cowansville and the R100 moored at St. Hubert was seen.

During the war years food parcels were sent overseas, then as peace came great interest was taken in hobby shows and fairs in the local schools. In 1952 the first hall burnt down, but the ladies were soon involved in efforts to build a new hall.

A very special honour came to this group when Mrs. Gordon Harvey was elected Provincial President of the QWI. Her name appeared often in the minutes and she travelled world-wide for WI.

In the 60s the Missisquoi Historical Society came into being and many took part to make the Museum a success. Mrs. Flora Rhicard headed a project to put up sign posts marking historical sites.

Now in the 80s two members are on the school committee of the regional school, and they hope to stress ideas of quality education that the WI strive for. Here we are 60 years

later. Not only did the members make a contribution to the community, but WI also gave these women opportunities for self expression and fellowship with others.

In 1939 Lady Tweedsmuir said she was proud to be a member of the Women's Institute as it was the greatest adult education movement in the world. It is the highest kind of education — the kind we give ourselves.

Mrs. Biggs said we are proud to be Institute members and she asked that a silent tribute be paid to the members of years past and remember their work for Home and Country. Invited guests expressed wishes for continued growth and success. Mrs. Reda Lewis read a poem "What Kind of WI Member are You?". She felt the last line could refer to Stanbridge East: "Like a good watch; open face, pure gold, quietly busy, and full of good work."

While lunch was prepared a social time was enjoyed and a History and Pictorial History were on display.



The Sutton WI assembled this quilt and sold it to CanSave. CanSave will sell the quilt and use the proceeds for needy children.

The cake was made by Mrs. Dianne Rhicard and decorated by Mrs. Sandra Wilson. Lunch was enjoyed, happy birthday sung, and the cake passed around, bringing a pleasant afternoon to a close and marking another milestone.

The following was read at recent meetings in both **Inverness** and **Kinnear's Mills** in Megantic County:

A Farmer's Prayer

As farmers and ranchers, dear God, give us the patience and wisdom to understand why a pound of steak at \$1.80 is "high", but a three-ounce cocktail at \$1.50 is acceptable.

And Lord help me to understand why \$3 for a ticket to a movie is "not bad", but \$3.50 for a bushel of wheat that makes 50 loaves is considered unreasonable.

And a 50-cent coke at the ball game is "OK", but a 20-cent glass of milk for breakfast is inflationary.

Cotton is "too high" at 65 cents a pound, but a \$20 shirt is viewed as a bargain. And corn is "too steep" at 3 cent's worth in a box of flakes, but the flakes are sold for 50 cents a serving.

And also, Lord, help me understand why I have to give an easement to the gas company so they can cross my property with their gas lines, and before they get it installed the price of gas has doubled.

And while you're at it, dear God, please help me understand the consumer who drives by my field and raises his eyebrows when he sees me driving a \$30,000 tractor that he helped put together so he could make money and drive down that right-of-way they took from me to build a road on so he could go hunting and skiing.

Thank you, God, for your past guidance. I hope you can help me make some sense out of all this. And please, God, send some rain.

Wrong Branch

In the June Journal it states that Fordyce sent In Memoriams to the Adelaide Hoodless Home for Mrs. Kemp and Mrs. Knight. This should have been Stanbridge East.

Dear WI Members:

Our recent postal strike and consequent lack of County reports allows me to bring you up-to-date on the following which I would like to call **"One Step Closer"**:

Briefly, I will outline the facts. It was the question of the boycott against the advertising campaigns of different producers who promoted their products called "Infant Formula" in underdeveloped countries to convince the people there that this kind of nutrition was the best for their children. Many families in these countries have been convinced that bottle-feeding is the "modern" way to feed their baby and that this method is as good if not better than breast milk. However, these families often are without the resources to prepare it safely: lack of clean water to mix with the powdered formula, no place to sterilize the bottle, and too low an income to buy enough formula so they have to over-dilute it. The result is that millions of babies in developing countries are suffering from malnutrition and each year many are dying from what is now called "baby bottle disease". In effect, the use of infant formula in poor countries is creating a new source of malnutrition.

After learning of the matter at the QWI Annual Convention in 1980, the voting members agreed to support the boycott along with some world organizations, the United Church, the Anglican Church, Infact Canada, and others. The boycott, especially of Nestlé products, was focused on that company more than the others — Bristol Myers, Abbott, and American Home Products — because Nestlé controls the largest share of the market in developing countries and, as it is thought, has been more resistant to changing its promotional practices and also, as a Swiss-based company, cannot be pressured by use of shareholder resolutions.

On May 28, 1981, the 34th World Health Assembly, meeting in Geneva,

adopted by a vote of 118 to 1 a Code for the marketing of breast milk substitutes. The United States voted against the adoption of the Code.

The non-binding Code urges a global ban on promotion and advertising of baby formula, on distribution of free product samples, and on gifts promoting the use of formula as a substitute for breast milk. It seeks to banish baby pictures from formula labels and bar companies from providing "mothercraft nurses" who visit homes in developing countries to promote the use of manufactured formula.

Proponents of the Code say manufacturers' high-powered sales tactics discourage breast feeding — universally regarded as the healthiest form of infant nourishment. They say baby formula is dangerously misused in the developing world, where it is mixed with polluted water under poor health conditions that contribute to millions of infant deaths.

The WHO Code urges member governments to "translate" it into national law and regulations.

Canada gave strong support for adoption of the Code in Geneva. Minister of Health Mme. Bégin spoke at the Assembly and said that there had been a great deal of discussion in Canada about the consequences of promotion and misuse of the formula. She has indicated that she will encourage provincial governments who have responsibility for health care to study how the Code might be applied in their province. Quebec has already banned the distribution of free samples through hospitals.

Members of the QWI will watch with interest to see how the Code is accepted and implemented by industry, governments, and individuals.

**Ruth von Brentani,
QWI Publicity.**

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